APPENDIX 7

Standard Operations Specifications

1. General. This appendix provides samples of standard operations specifications (OpSpecs) provisions typically issued for operations described in this AC. Standard OpSpecs are developed by FAA Flight Standards Service, Washington D.C., and are issued by certificate holding district offices (CHDOs) to each specific operator. CHDO's incorporate any necessary specific information applicable to that operator, to that operator's fleet of aircraft, or to that operator's specific operational environment or requirements (e.g. areas of operation).

OpSpecs specify limitations, conditions, and other provisions which operators must comply with to comply with the FAR. Standard OpSpecs are normally coordinated with industry prior to issuance to ensure a mutual and clear understanding of content and applicability, and to pre-determine the effect they may have on operations. After appropriate coordination new standard provisions, or amendments to existing provisions are incorporated into the FAA's computer based OpSpecs program used by field offices.

Use of standard OpSpecs provisions facilitates application of equivalent safety criteria for various operators, aircraft types and operating environments. Occasionally, it may be necessary to issue OpSpecs provisions that are non-standard because of unique situations not otherwise addressed by standard provisions. Non-standard OpSpec provisions may be more or less restrictive than standard provisions, depending on the circumstances necessary to show appropriate safety for the intended application. Nonstandard OpSpecs provisions typically should not be contrary to the provisions of standard paragraphs. In cases when a non-standard paragraph is more or less restrictive than a standard paragraph, appropriate justification must be provided.

The following Standard OpSpec paragraphs are provided:

Part A - General

A002 Definitions and Abbreviations

Part C - Airplane Terminal instrument Procedures and Airport Authorizations and Limitations

C051 Terminal Instrument Procedures
C052 Basic Instrument Approach Procedure Authorizations -- All Airports
C053 Category I IFR Landing Minimums -- All Airports
C054 Special Limitations and Provisions for Instrument Approach Procedures and IFR Landing Minimums
C055 Alternate Airport IFR Weather Minimums
C056 IFR Standard Takeoff Minimums, Part 121 Airplane Operations -- All Airports
C059 Category II Instrument Approach and Landing Operations
C061 Flight Control Guidance Systems for Automatic Landing Operations Other Than Category II or III
C062 Manually Flown Flight Control Guidance Systems Certified for Landing Operations Other Than Category II or III
C074 Category I, ILS, MLS, or GLS Approach Procedures and IFR Landing Minimums All Airports.
C075 Circling Approach Procedures
C076 Category I IFR Landing Minimums -- Contact Approaches
C078 Lower Than Standard Takeoff Minimums, Part 121 Airplane Operations All Airports
C081 Special Non CFR Part 97 Instrument Approach or Departure Procedures.

2. FAR 121 Operations Specifications - PART A

The following pertinent excerpts are provided from Operations Specifications Part A:

Instrument Approach Categories are defined as follows:

Category I	An instrument approach or approach and landing with a decision altitude (height) or minimum descent altitude (height) not lower than 60m (200 ft) and with either a visibility not less than 800m (2400 ft), or a runway visual range not less than 550m (1800 ft).
Category II	An instrument approach or approach and landing with a decision height lower than 60m (200 ft) but not lower than 30m (100 ft) and a runway visual range not less than 350m (1200 ft).
Category III	An instrument approach or approach and landing with a decision height lower than 30m (100 ft), or no decision height, or a runway visual range less than 350m (1200 ft).
Category IIIa	An instrument approach and landing with a decision height lower than 30m (100 ft), or no decision height and a runway visual range not less than 200m (700 ft).
Category IIIb	An instrument approach and landing with a decision height lower than 15m (50 ft), or no decision height and a runway visual range less than 200m (700 ft) but not less than 50m (150 ft).
Category IIIc	An instrument approach and landing with or without a decision height, with a runway visual range less than 50m (150 ft).

Other related definitions as follows:

Class I Navigation. Class I navigation is any en route flight operation or portion of an operation that is conducted entirely within the designated Operational Service Volumes (or ICAO equivalent) of ICAO standard airway navigation facilities (VOR, VOR/DME, NDB). Class I navigation also includes en route flight operations over routes designated with an "MEA GAP" (or ICAO equivalent). En route flight operations conducted within these areas are defined as "Class I navigation" operations irrespective of the navigation means used. Class I navigation includes operations within these areas using pilotage or any other means of navigation which does not rely on the use of VOR, VOR/DME, or NDB.

Class II Navigation. Class II navigation is any en route flight operation which is not defined as Class I navigation. Class II navigation is any en route flight operation or portion of an en route operation irrespective of the means of navigation) which takes place outside (beyond) the designated Operational Service Volume (or ICAO equivalents) of ICAO standard airway navigation facilities (VOR, VOR/DME, NDB). However, Class II navigation does not include en route flight operations over routes designated with an "MEA GAP" (or ICAO equivalent).

Operational Service Volume. The Operational Service Volume is that volume of airspace surrounding a NAVAID which is available for operational use and within which a signal of usable strength exists and where that signal is not operationally limited by co-channel interference. Operational Service Volume includes all of the following:
(1) The officially designated Standard Service Volume excluding any portion of the Standard Service Volume which has been restricted.
(2) The Expanded Service Volume.
(3) Within the United States, any published instrument flight procedure (victor or jet airway, SID, STARS, SIAPS, or instrument departure).
(4) Outside the United States, any designated signal coverage or published instrument flight procedure equivalent to U.S. standards.

3. FAR 121 Operations Specifications - PART C

The following pertinent excerpts are provided from Operations Specifications Part C:

C051, Terminal Instrument Procedures.

a. The certificate holder is authorized to conduct terminal instrument operations using the procedures and minimums specified in these operations specifications, provided one of the following conditions is met:

(1) The terminal instrument procedure used is prescribed by these operations specifications.
(2) The terminal instrument procedure used is prescribed by Title 14 Code of Federal Regulations (CFR) Part 97, Standard Instrument Approach Procedures.
(3) At U.S. military airports, the terminal instrument procedure used is prescribed by the U.S. military agency operating the airport.
(4) If authorized foreign airports, the terminal instrument procedure used at the foreign airport is prescribed or approved by the government of an ICAO contracting state. The terminal instrument procedure must meet criteria equivalent to that specified in either the United States Standard for Terminal Instrument Procedures (TERPS); or ICAO Document 8168-OPS; Procedures for Air Navigation Services-Aircraft Operations (PANS-OPS), Volume II; or Joint Aviation Authorities, Joint Aviation Requirements, operational agreements, Part 1 (JAR-OPS-1).

b. If Applicable, Special Limitations, and Provisions for Instrument Approaches at Foreign Airports.

(1) Terminal instrument procedures may be developed and used by the certificate holder for any foreign airport, provided the certificate holder makes a determination that each procedure developed is equivalent to U.S. TERPS, ICAO PANS-OPS, or JAR-OPS-1 criteria and submits to the FAA a copy of the terminal instrument procedure with supporting documentation.
(2) At foreign airports, the certificate holder shall not conduct terminal instrument procedures determined by the FAA to be "not authorized for United States air carrier use." In these cases, the certificate holder may develop and use a terminal instrument procedure provided the certificate holder makes a determination that each procedure developed is equivalent to U.S. TERPS, ICAO PANS-OPS, or JAR-OPS-1 criteria and submits to the FAA a copy of the terminal instrument procedure with supporting documentation.
(3) When operating at foreign airports RVR values or meteorological visibility might be shown in meters. When the minimums are specified only in meters, the certificate holder shall use the metric operational equivalents as specified in the RVR Conversion Table (Table 1) or the Meteorological Visibility Conversion Table (Table 2) for both takeoff and landing. Values not shown may be interpolated.

TABLE 1	
RVR CONVERSION	
FEET	**METERS**
300 ft	75 m
400 ft	125 m
500 ft	150 m
600 ft	175 m
700 ft	200 m
1000 ft	300 m
1200 ft	350 m
1600 ft	500 m
1800 ft	550 m
2000 ft	600 m
2100 ft	650 m
2400 ft	750 m
3000 ft	1000 m
4000 ft	1200 m
4500 ft	1400 m
5000 ft	1500 m
6000 ft	1800 m

TABLE 2		
METEOROLOGICAL VISIBILITY CONVERSION		
STATUTE MILES	**METERS**	**NAUTICAL MILES**
¼ sm	400 m	¼ nm
3/8 sm	600 m	3/8 nm
1/2 sm	800 m	1/2 nm
5/8 sm	1000 m	5/8 nm
3/4 sm	1200 m	7/10 nm
7/8 sm	1400 m	7/8 nm
1 sm	1600 m	9/10 nm
1 1/8 sm	1800 m	1 1/8 nm
1 ¼ sm	2000 m	1 1/10 nm
1 ½ sm	2400 m	1 3/10 nm
1 ¾ sm	2800 m	1 ½ nm
2 sm	3200 m	1 ¾ nm
2 ¼ sm	3600 m	2 nm
2 ½ sm	4000 m	2 2/10 nm
2 ¾ sm	4400 m	2 4/10 nm
3 sm	4800 m	2 6/10 nm

(5) When operating at foreign airports where the published landing minimums are specified in RVR, the RVR may not be available, therefore the meteorological visibility is reported. When the minimums are reported in meteorological visibility, the certificate holder shall convert meteorological visibility to RVR by multiplying the reported visibility by the appropriate factor, shown in Table 3. The conversion of reported meteorological visibility to RVR is used only for Category I landing minimums, and shall not be used for takeoff minima, CAT II or III minima, or when a reported RVR is available.

TABLE 3 [RVR = (reported meteorological visibility) X (factor)]		
AVAILABLE LIGHTING	**DAY**	**NIGHT**
High Intensity approach and runway lighting	1.5	2.0
Any type of lighting installation other than above	1.0	1.5
No lighting	1.0	N/A

C052, Basic Instrument Approach Procedure Authorizations - All Airports.

The certificate holder is authorized to conduct the following types of instrument approach procedures and shall not conduct any other types.

a. Instrument Approach Procedures Other Than ILS, MLS, and GLS

[NOTE: In the new OPSS, the POI will select the approaches that apply to the air carrier. If the OPSS is not available, the POI should delete the approach types that do not apply.]

VOR	VOR/DME	NDB	NDB/DME	LOC
LOC `BC	LOC/DMESDF	TACAN	ASR	LDA
LDA/DME	LDA (w/Glide Slope)	RNAV	GPS	AZI
AZI/DME	AZI/DME Back Course			

b. ILS, MLS, and GLS Instrument Approach Procedures

ILS
ILS/PRM
GLS
MLS
PAR
ILS/DME

c. Other Conditions and Limitations (as required).

C053, Straight-In Category I Approach Procedures Other Than ILS, MLS, or GLS and IFR Landing Minimums - All Airports.

The certificate holder shall not use any IFR Category I landing minimum lower than that prescribed by the applicable published instrument approach procedure. The IFR landing minimums prescribed in this paragraph are the lowest Category I minimums authorized for use at any airport.

a. Category I Approach Procedures Other Than ILS, MLS, or GLS. The certificate holder shall not use an IFR landing minimum for straight-in approach procedures other than ILS, MLS or GLS, lower than that specified in the following table. Touchdown zone (TDZ) RVR reports, when available for a particular runway, are controlling for all approaches to and landings on that runway (See NOTE 6).

Straight-In Category I Approaches (Approaches other than ILS, MLS, or GPS Landing System (GLS)					
		Aircraft Category A, B, and C		Aircraft Category D	
Approach Light Configuration	**HAT** (See NOTES 1, 2, & 3)	**Visibility in Statute Miles**	**TDZ RVR In Feet**	**Visibility in Statute Miles**	**TDZ RVR In Feet**
No Lights	250	1	5,000	1	5,000
ODALS	250	3/4	4,000	1	5,000
MALS, or SALS	250	5/8	3,000	1 (See NOTE 5)	5,000 (see NOTE 5 & 6)
MALSR, or SSALR, or ALSF-1, or ALSF-2	250	½ (See NOTE 4)	2,400 (See NOTE 4 & 6)	1 (See NOTE 5)	5,000 (See NOTE 5 & 6)
DME ARC, any light configuration	500	1	5,000	1	5,000

NOTE 1: For NDB approaches with a FAF, add 50 ft. to the HAT.
NOTE 2: For NDB approaches without a FAF, add 100 ft. to the HAT.
NOTE 3: For VOR approaches without a FAF, add 50 ft. to the HAT.
NOTE 4: For NDB approaches, the lowest authorized visibility is ¾ and the lowest RVR is RVR 4000.
NOTE 5: For LOC approaches, the lowest authorized visibility is ¾ and the lowest RVR is RVR 4000.
NOTE 6: The mid RVR and rollout RVR reports (if available) provide advisory information to pilots. The mid RVR report may be substituted for the TDZ RVR report if the TDZ RVR report is not available.

b. Special Limitations and Provisions for Instrument Approach Procedures at Foreign Airports. If the certificate holder operates to foreign airports the following applies:

(1) Foreign approach lighting systems equivalent to U.S. standards are authorized for precision and nonprecision instrument approaches. Sequenced flashing lights are not required when determining the equivalence of a foreign approach lighting system to U.S. standards.

(2) For straight-in landing minimums at foreign airports where an MDA(H) or DA(H) is not specified, the lowest authorized MDA(H) or DA(H) shall be obtained as follows:

(a) When an obstruction clearance limit (OCL) is specified, the authorized MDA(H) or DA(H) is the sum of the OCL and the touchdown zone elevation (TDZE). If the TDZE for a particular runway is not available, threshold elevation shall be used. If threshold elevation is not available, airport elevation shall be used. For approaches other than ILS, MLS, or GLS, the MDA(H) may be rounded to the next higher 10-foot increment.

(b) When an obstacle clearance altitude (OCA)/obstacle clearance height (OCH) is specified, the authorized MDA(H) or DA(H) is equal to the OCA/OCH. For approaches other than ILS, MLS, or GLS, the authorized MDA(H) may be expressed in intervals of 10 feet.

(c) The HAT or HAA used for approaches other than ILS, MLS, or GLS, shall not be below those specified in subparagraph a above of this operations specification.

(3) When only an OCL or an OCA/OCH is specified, visibility and/or RVR minimums appropriate to the authorized HAA/HAT values determined in accordance with subparagraph b(2) above will be established in accordance with criteria prescribed by U.S. TERPS or Joint Aviation Authorities, Joint Aviation Requirements, operational agreements, Part 1 (JAR-OPS-1).

(4) When conducting an instrument approach procedure outside the United States, the certificate holder shall not operate an aircraft below the prescribed MDA(H) or continue an approach below the DA(H), unless the aircraft is in a position from which a normal approach to the runway of intended landing can be made and at least one of the following visual references is clearly visible to the pilot:

(a) Runway, runway markings, or runway lights.
(b) Approach light system (in accordance with CFR Section 91.175(c)(3)(i)).
(c) Threshold, threshold markings, or threshold lights.
(d) Touchdown zone, touchdown zone markings, or touchdown zone lights.
(e) Visual glidepath indicator (such as, VASI, PAPI).
(f) Runway end identifier lights.

C054, Limitations and Provisions for Instrument Approach Procedures and IFR Landing Minimums.

a. High Minimum Pilot-in-Command Provisions. Pilots-in-command who have not met the requirements of Title 14 of the Code of Federal Regulations (CFR) Section 121.652 or 135.225(d) as appropriate, shall use the high minimum pilot RVR landing minimum equivalents as determined from the following table.

RVR Landing Minimum as Published	RVR Landing Minimum Equivalent required for High Minimum Pilots
RVR 1800	RVR 4500
RVR 2000	RVR 4500
RVR 2400	RVR 5000
RVR 3000	RVR 5000
RVR 4000	RVR 6000
RVR 5000	RVR 6000

b. Limitations on the Use of Landing Minimums for Turbojet Airplanes.

(1) A pilot-in-command of a turbojet airplane shall not conduct an instrument approach procedure when visibility conditions are reported to be less than ¾ statute mile or RVR 4000 until that pilot has been specifically qualified to use the lower landing minimums.

(2) A pilot-in-command of a turbojet airplane shall not begin an instrument approach procedure when the visibility conditions are reported to be less than ¾ statute mile or RVR 4000, unless the following conditions exist:

(a) Fifteen percent additional runway length is available over the landing field length specified for the destination airport by the appropriate Sections of the CFR.

(b) Precision instrument (all weather) runway markings or runway centerline lights are operational on that runway.

C055, Alternate Airport IFR Weather Minimums.

a. The certificate holder is authorized to derive alternate airport weather minimums from the "Alternate Airport IFR Weather Minimums" table listed below.
b. Special limitations and provisions.
(1) In no case shall the certificate holder use an alternate airport weather minimum other than any applicable minimum derived from this table.
(2) In determining alternate airport weather minimums, the certificate holder shall not use any published instrument approach procedure which specifies that alternate airport weather minimums are not authorized.
(3) Credit for alternate minima based on CAT II or CAT III capability is predicated on authorization for engine inoperative CAT III operations for the certificate holder, aircraft type, and qualification of flightcrew for the respective CAT II or CAT III minima applicable to the alternate airport.

Alternate Airport IFR Weather Minimums [sm = statute mile]		
Approach Facility Configuration	**Ceiling**	**Visibility**
For airports with at least one operational navigational facility providing a straight-in nonprecision approach procedure, or a straight-in precision approach procedure, or, when applicable, a circling maneuver from an instrument approach procedure.	A ceiling derived by adding 400 ft. to the authorized Category I HAT or, when applicable, the authorized HAA	A visibility derived by adding 1 sm to the authorized Category I landing minimum.
For airports with at least two operational navigational facilities, each providing a straight-in nonprecision approach procedure or a straight-in precision approach procedure to different, suitable runways. (However, when an airport is designated as an ER-OPS En Route Alternate Airport in these operations specifications, the approach procedures used must be to separate, suitable runways).	A ceiling derived by adding 200 ft. to the higher Category I HAT of the two approaches used.	A visibility derived by adding ½ sm to the higher authorized Category I landing minimum of the two approaches used.
For airports with a published CAT II or CAT III approach, and at least two operational navigational facilities, each providing a straight-in precision approach procedure to different, suitable runways.	CAT II procedures, a ceiling of at least 300 ft. HAT, or for CAT III procedures, a ceiling of at least 200 ft. HAT.	CAT II procedures, a visibility of at least RVR 4000, or for CAT III procedures, a visibility of at least RVR 1800.

Paragraph C056, IFR Takeoff Minimums, Part 121 Airplane Operations - All Airports.

a. Standard takeoff minimums are defined as 1 statute mile visibility or RVR 5000 for airplanes having 2 engines or less and ½ statute mile visibility or RVR 2400 for airplanes having more than 2 engines.

b. RVR reports, when available for a particular runway, shall be used for all takeoff operations on that runway. All takeoff operations, based on RVR, must use RVR reports from the locations along the runway specified in this paragraph.

c. When a takeoff minimum is not published, the certificate holder may use the applicable standard takeoff minimum and any lower than standard takeoff minimums authorized by these operations specifications. When standard takeoff minimums or greater are used, the Touchdown Zone RVR report, if available, is controlling.

d. When a published takeoff minimum is greater than the applicable standard takeoff minimum and an alternate procedure (such as a minimum climb gradient compatible with aircraft capabilities) is not prescribed, the certificate holder shall not use a takeoff minimum lower than the published minimum. The Touchdown Zone RVR report, if available, is controlling.

C059, Category II Instrument Approach and Landing Operations.

The certificate holder is authorized to conduct Category II (CAT II) instrument approach and landing operations to the airports and runways listed in subparagraph g using the procedures and minimums specified in this paragraph and shall conduct no other CAT II operations.

a. CAT II Approach and Landing Minimums. The certificate holder shall not use any CAT II IFR landing minimums lower than those prescribed by any applicable published CAT II instrument approach procedure. The CAT II IFR landing minimums prescribed by these operations specifications are the lowest CAT II minimums authorized for use at any airport.

b. The certificate holder is authorized to use the following CAT II straight-in approach and landing minimums at the authorized airports and runways listed in Table 3, for the aircraft listed in Table 1 below, provided the limitations in subparagraph g. are met.

Table 1

CAT II Approach and Landing Minimums		
Airplane M/M/S	**DH Not less Than**	**Lowest Authorized RVR**

c. Lower than standard CAT II. If the certificate holder is authorized lower than standard CAT II minimums with a decision height of 100 feet and RVR 1000 feet (300 meters), it shall be entered in Table 1 above. If authorized in Table 1, the following limitations and provisions must be met:

(1) Used only when conducting an autoland approach, or when using a head-up guidance system (HGS) to touchdown.
(2) The airplane and its automatic flight control guidance system or manually flown guidance system must be approved for approach and landing operations as specified by operations specifications paragraphs C060, C061, or C062 of these operations specifications.
(3) The autopilot or HGS must be listed in the required CAT II airborne equipment in subparagraph d, Table 2, of this operations specification.

d. Required CAT II Airborne Equipment. The flight instruments, radio navigation equipment, and other airborne systems required by the applicable Section of the Title 14 Code of Federal Regulations (CFR) and the FAA-approved Airplane Flight Manual for the conduct of CAT II operations must be installed and operational. The additional airborne equipment listed or referenced in Table 2 below is also required and must be operational for CAT II operations.

Table 2

Kind of CAT II Operation		
Airplane M/M/S	**Additional Equipment & Special Provisions**	**Manual/Auto Pilot**

e. Required RVR Reporting Equipment. The certificate holder shall not conduct any CAT II operation, unless the following RVR reporting systems are installed and operational for the runway of intended landing:

(1) For authorized landing minimums not less than RVR 1600, the touchdown zone RVR reporting system is required and must be used. This RVR report is controlling for all operations.
(2) For authorized landing minimums less than RVR 1600, the touchdown zone and the rollout RVR reporting systems are required and must be used. The touchdown zone RVR report is controlling for all operations and the rollout RVR report provides advisory information to pilots. The mid RVR report (if available) provides advisory information to pilots and may be substituted for the rollout RVR report if the rollout RVR report is not available.

f. Pilot Qualifications. A pilot-in-command shall not conduct CAT II operations in any airplane until that pilot has successfully completed the certificate holder's approved CAT II training program, and has been certified as being qualified for CAT II operations by one of the certificate holder's check airmen properly qualified for CAT II operations or an FAA inspector. Pilots-in-command who have not met the requirements of 14 CFR Section 121.652 shall use high minimum pilot landing minima not less than RVR 1800.

g. Operating Limitations. The certificate holder shall not begin the final approach segment of an instrument approach procedure, unless the latest reported controlling RVR is at or above the minimums authorized for the operation being conducted. If the aircraft is established on the final approach segment and the controlling RVR is reported to decrease below the authorized minimums, the approach may be continued to the DH applicable to the operation being conducted. The certificate holder shall not begin the final approach segment of an instrument approach procedure when the touchdown zone RVR report is less than RVR 1800, unless all of the following conditions are met:

(1) The airborne equipment required by subparagraph d above is installed and operating satisfactorily.
(2) The required components of the CAT II ground system are installed and in normal operation including all of the following:

(a) Each required component of the ground based CAT II navigation system. For ILS operations, a precision or surveillance radar fix, a designated NDB, VOR, DME fix, or a published minimum GSIA fix may be used in lieu of an outer marker. Except for CAT II instrument approach procedures designated as "RA NA" (radar/radio altimeter not authorized) operative radar/radio altimeters may be used in lieu of an inner marker. A middle marker is not required.
(b) ALSF-1 or ALSF-2 approach lighting systems or foreign authorizations acceptable to FAA. Sequenced flashing lights are required only at U.S. airports.
(c) High intensity runway lights.
(d) Approved touchdown zone lights and runway centerline lights.

(3) The RVR reporting systems required by subparagraph e above are operating satisfactorily.
(4) The crosswind component on the landing runway is less than the airplane flight manual's crosswind limitations, or 15 knots or less, whichever is more restrictive.
(5) Fifteen percent additional runway length is available over the landing field length specified for destination airport in 14 CFR Section 121.195(b) or Section 135.385(b), as appropriate.
(6) Precision CAT II landing minimums to airports listed in Table 3 without touchdown zone and centerline lighting are authorized only when an auto-coupled approach or HGS is used to touch down.
(7) Additionally, MALSR or ALSF-1 or ALSF-2 approach lighting system or equivalent are required for the operations listed in Table 3.

h. Missed Approach Requirements. A missed approach shall be initiated when any of the following conditions exist:

(1) Upon reaching the authorized decision height, the pilot has not identified the required visual references to safely continue the approach by visual reference alone.
(2) After passing the authorized decision height, the pilot loses contact with the required visual references, or a reduction in visual reference occurs which prevents the pilot from safely continuing the approach by visual reference alone.
(3) The pilot determines that a landing cannot be safely accomplished within the touch down zone.
(4) Before arriving at DH, any of the required elements of the CAT II ground system becomes inoperative.
(5) Any of the airborne equipment required for the particular CAT II operation being conducted becomes inoperative. However, if the certificate holder is authorized both manually flown and automatically flown CAT II operations, an automatic approach may be continued manually using the approved manual systems, provided the automatic system has malfunctioned and is disengaged higher than 1,000 feet above the elevation of the touchdown zone.
(6) The crosswind component at touch down is expected to be greater than 15 knots, or greater than airplane flight manual crosswind limitations, whichever is more restrictive.

i. Authorized CAT II Airports and Runways. The certificate holder is authorized CAT II operations at airports and runways approved for CAT II operations in 14 CFR Part 97. CAT II operations are also authorized for the airports and runways listed in table 3 below.

Table 3

Airport Name/Identifier	Runways	Special Limitations

C061, Flight Control Guidance Systems for Automatic Landing Operations Other Than Categories II and III

The certificate holder is authorized to conduct automatic approach and landing operations (other than Categories II and III) at suitably equipped airports. The certificate holder shall conduct all automatic approach and landing operations in accordance with the provisions of this paragraph.

a. Authorized Airplanes and Flight Control Guidance Systems. The certificate holder is authorized to conduct automatic approach and landing operations using the following aircraft and automatic flight control guidance systems.

Airplane Type M/M/S	Flight Control Guidance Systems Manufacturer	Model

b. Special Limitations.

(1) The certificate holder shall conduct all operations authorized by this paragraph in accordance with applicable Section of Title 14 Code of Federal Regulations and the airworthiness certification basis of the automatic flight control guidance system used.
(2) The certificate holder shall not conduct automatic landing operations to any runway using these systems, unless the certificate holder determines that the flight control guidance system being used permits safe automatically flown approaches and landings to be conducted at that runway.
(3) The certificate holder shall not conduct any operations authorized by this paragraph, unless the certificate holder's approved training program provides training in the equipment and special procedures to be used.
(4) Except when automatic approaches and landings are performed under the supervision of a properly qualified check airman, any pilot used by the certificate holder to conduct automatic approaches and landings must be qualified in accordance with the certificate holder's approved training program.

C062, Manually Flown Flight Control Guidance System Certified for Landing Operations Other Than Categories II and III.

The certificate holder is authorized to conduct approach and landing operations (other than Categories II and III) at suitably equipped airports using manually flown flight control guidance systems approved for landing operations. The certificate holder shall conduct all approach and landing operations authorized by this paragraph in accordance with the provisions of this paragraph.

a. Authorized Airplanes and Manual Flight Control Systems. The certificate holder is authorized to conduct approach and landing operations using the following aircraft and manually flown flight control guidance systems which are certified for landing operations.

Airplane Type M/M/S	Manual Flight Control Guidance Systems Manufacturer	Model

b. Special Limitations.

(1) The certificate holder shall conduct all operations authorized by this paragraph in accordance with applicable Section of the Code of Federal Regulations and the airworthiness certification basis of the manually flown flight control guidance system being used.
(2) The certificate holder shall not conduct landing operations to any runway using these systems, unless the certificate holder determines that the flight control guidance system being used permits safe manually flown approaches and landings to be conducted at that runway.
(3) The certificate holder shall not conduct any operations authorized by this paragraph, unless the certificate holder's approved training program provides training in the equipment and special procedures to be used.
(4) Except when operations are performed under the supervision of a properly qualified check airman, any pilot used by the certificate holder to conduct manually flown approaches and landings using these systems must be qualified for the operation being conducted in accordance with the certificate holder's approved training program.

C074, Category I, ILS, MLS, or GLS Approach Procedures and IFR Landing Minimums - All Airports.

The certificate holder shall not use any IFR Category I landing minimum lower than that prescribed by the applicable published instrument approach procedure. The IFR landing minimums prescribed in this paragraph are the lowest Category I minimums authorized for use at any airport.

a. Category I, ILS, MLS, or GPS Landing System (GLS) Approach Procedures. The certificate holder shall not use an IFR landing minimum for precision, ILS, MLS, or GLS approach procedures lower than specified in the following table. Touchdown zone RVR reports, when available for a particular runway, are controlling for all approaches to and landings on that runway.

PRECISION APPROACHES (Require operative lateral and vertical guidance)			
Approach Light Configuration	**HAT**	**Aircraft Category A, B, C, and D**	
		Visibility in Statute Miles	**TDZ RVR in Feet** (See NOTE 2
No Lights or ODALS	200	3/4	4000
MALS or SALS	200	5/8	3000
MALSR, or SSALR, or ALSF-1 or ALSF-2	200	1/2	2400
MALSR with TDZ and CL, or SSALR with TDZ and CL, or ALSF-1/ALSF-2 with TDZ and CL	200	visibility not authorized (See NOTE 1)	1800
MALS, or MALSR, or SSALR, or ALSF- 1/ALSF-2, or REILS and HIRL, or RAIL, and HIRL	200	visibility not authorized	1800 (See NOTE 3)

NOTE 1: Visibility values below ½ statute mile are not authorized and shall not be used.
NOTE 2: The mid RVR and rollout RVR reports (if available) provide advisory information to pilots. The mid RVR report may be substituted for the TDZ RVR report if the TDZ RVR report is not available.
NOTE 3: These minimums apply to autoland or HGS-equipped aircraft when operated by a properly qualified flightcrew and flown in the appropriate CAT III annunciation mode at the authorized airports and runways listed in paragraph b. below.

b. The certificate holder is authorized precision Category I landing minimums as low as 1800 RVR without touchdown zone and centerline lights with autoland or HGS-equipped aircraft at the following airports and runways:

Airport 4- Letter Identifier	**Runways**	**Special Limitation**

c. Special Aircrew, Aircraft Authorized Minimums. The certificate holder shall not use an IFR landing minimum for straight-in precision Category I approaches labeled as "Special Aircrew, Aircraft Authorization Required" except in accordance with subparagraph a of this operations specification and the following:

(1) The authorized aircraft must be equipped with an approved approach coupler, flight director, or a head-up guidance system (HGS) which provides guidance to decision height. Pilots-in-command (PIC) must be required to engage the autopilot coupler, flight director, or HGS as applicable and use it to decision height or initiation of missed approach unless adequate visual references with the runway environment are established which allow safe continuation to a landing.
(2) Should the autopilot, flight director, or HGS malfunction or be disengaged during the approach, the PIC must execute a missed approach not later than arrival at standard minimums unless visual reference to the runway environment has been established.
(3) Pilots must be trained in the use of the autopilot coupler, flight director, or HGS as applicable and demonstrate proficiency in ILS approaches to minimums using this equipment on checks conducted to satisfy Title 14 CFR Section 121.441 or Section 135.297.

d. Limitations and Provisions for Instrument Approach Procedures at Foreign Airports. If the certificate holder operates to foreign airports the following applies:

(1) Foreign approach lighting systems equivalent to U.S. standards are authorized for precision and nonprecision instrument approaches. Sequenced flashing lights are not required when determining the equivalence of a foreign approach lighting system to U.S. standards.
(2) For straight-in landing minimums at foreign airports where an MDA(H) or DA(H) is not specified, the lowest authorized MDA(H) or DA(H) shall be obtained as follows:

(a) When an obstruction clearance limit (OCL) is specified, the authorized MDA(H) or DA(H) is the sum of the OCL and the touchdown zone elevation (TDZE). If the TDZE for a particular runway is not available, threshold elevation shall be used. If threshold elevation is not available, airport elevation shall be used. For approaches other than ILS, MLS, or GLS, the MDA(H) may be rounded to the next higher 10-foot increment.
(b) When an obstacle clearance altitude (OCA)/obstacle clearance height (OCH) is specified, the authorized MDA(H) or DA(H) is equal to the OCA/OCH. For approaches other than ILS, MLS, or GLS, the authorized MDA(H) may be expressed in intervals of 10 feet.
(c) The HAT or HAA used for precision approaches shall not be below those specified in subparagraph a of this operations specification.

(3) When only an OCL or an OCA/OCH is specified, visibility and/or RVR minimums appropriate to the authorized HAA/HAT values determined in accordance with subparagraph d(2) above will be established in accordance with criteria prescribed by U.S. TERPS or Joint Aviation Authorities, Joint Aviation Requirements, operational agreements, Part 1 (JAR-OPS-1).
(4) When conducting an instrument approach procedure outside the United States, the certificate holder shall not operate an aircraft below the prescribed MDA(H) or continue an approach below the DA(H), unless the aircraft is in a position from which a normal approach to the runway of intended landing can be made and at least one of the following visual references is clearly visible to the pilot:

(a) Runway, runway markings, or runway lights.
(b) Approach light system (in accordance with 14 CFR Section 91.175(c)(3)(i)).
(c) Threshold, threshold markings, or threshold lights.
(d) Touchdown zone, touchdown zone markings, or touchdown zone lights.
(e) Visual glidepath indicator (such as, VASI, PAPI).
(f) Runway end identifier lights.

C075, Category I IFR Landing Minimums - Circling Maneuvers

The certificate holder shall not use any IFR Category I landing minimum lower than that prescribed by the applicable published instrument approach procedure. The IFR landing minimums prescribed in this paragraph are the lowest Category I minimums authorized for use at any airport.

a. Circling Maneuvers. The certificate holder shall not conduct circling maneuvers when the ceiling is less than 1,000 feet or the visibility is less than 3 statute miles, unless the flightcrew has satisfactorily completed an approved training program for the circling maneuver or satisfactorily completed a flight check for the circling maneuver. When conducting an instrument approach procedure which requires a circling maneuver to the runway of intended landing, the certificate holder shall not use a landing minimum lower than the minimum prescribed for the applicable circling maneuver or a landing minimum lower than specified in the following table, whichever is higher. The lowest authorized IFR landing minimum for instrument approaches which require a circling maneuver to the runway of intended landing shall be determined for a particular aircraft by using the speed category appropriate to the highest speed used during the circling maneuver.

Speed Category	HAA	Visibility in Statute Miles
less than 91 kts	350	1
91 to 120 kts	450	1
121 to 140 kts	450	1 ½
141 to 165 kts	550	2
above 165 kts	1000	3

b. Unless flying with a check airman, a pilot may not fly the circling maneuver if there is a restriction on that pilot's certificate that restricts or limits the circling approach to visual flight rules only.

c. If Applicable, Special Limitations and Provisions for Instrument Approach Procedures at Foreign Airports.

(1) Foreign approach lighting systems equivalent to U.S. standards are authorized for precision and nonprecision instrument approaches. Sequenced flashing lights are not required when determining the equivalence of a foreign approach lighting system to U.S. standards.

(2) For straight-in landing minimums at foreign airports where an MDA(H) or DA(H) is not specified, the lowest authorized MDA(H) or DA(H) shall be obtained as follows:

(a) When an obstruction clearance limit (OCL) is specified, the authorized MDA(H) or DA(H) is the sum of the OCL and the touchdown zone elevation (TDZE). If the TDZE for a particular runway is not available, threshold elevation shall be used. If threshold elevation is not available, airport elevation shall be used. For approaches other than ILS, MLS, or GLS, the MDA(H) may be rounded to the next higher 10-foot increment.

(b) When an obstacle clearance altitude (OCA)/obstacle clearance height (OCH) is specified, the authorized MDA(H) or DA(H) is equal to the OCA/OCH. For approaches other than ILS, MLS, or GLS, the authorized MDA(H) may be expressed in intervals of 10 feet.

(c) The HAT or HAA used for precision approaches shall not be below those specified in subparagraph a of this operations specification.

(3) When only an OCL or an OCA/OCH is specified, visibility and/or RVR minimums appropriate to the authorized HAA/HAT values determined in accordance with subparagraph b(2) above will be established in accordance with criteria prescribed by U.S. TERPS or Joint Aviation Authorities, Joint Aviation Requirements, operational agreements, Part 1 (JAR-OPS-1).

(4) When conducting an instrument approach procedure outside the United States, the certificate holder shall not operate an aircraft below the prescribed MDA(H) or continue an approach below the DA(H), unless the aircraft is in a position from which a normal approach to the runway of intended landing can be made and at least one of the following visual references is clearly visible to the pilot:

(a) Runway, runway markings, or runway lights.
(b) Approach light system (in accordance with 14 CFR Section 91.175(c)(3)(i)).
(c) Threshold, threshold markings, or threshold lights.
(d) Touchdown zone, touchdown zone markings, or touchdown zone lights.
(e) Visual glidepath indicator (such as, VASI, PAPI).
(f) Runway end identifier lights.

d. Notwithstanding the requirements of 14 CFR part 121 appendices E and F, the certificate holder is authorized to apply the requirements of SFAR 58 (AQP), if applicable, for flightcrew training to proficiency in circling maneuvers. The certificate holder may not perform circling maneuvers in weather minimums lower than 1,000 feet and 3 miles with an HAA no lower than 1,000 feet or the published minimum for the circling approach, whichever is higher.

C076, Category I IFR Landing Minimums - Contact Approaches.

The certificate holder shall not use any IFR Category I landing minimum lower than that prescribed by the applicable published instrument approach procedure. The IFR landing minimums prescribed in paragraphs C053 for *nonprecision* "other than ILS, MLS, or GLS" approaches and C074 for *precision* "ILS, MLS, or GLS" approaches of these operations specifications are the lowest Category I minimums authorized for use at any airport.

a. Contact Approaches. The certificate holder shall not conduct contact approaches, unless the pilot-in-command has satisfactorily completed an approved training program for contact approaches. In addition, the certificate holder shall not conduct a contact approach unless the approach is conducted to an airport with an approved instrument approach procedure for that airport, and all of the following conditions are met:

(1) The flight remains under instrument flight rules and is authorized by ATC to conduct a contact approach.
(2) The reported visibility/RVR for the runway of intended landing is at or above the authorized IFR minimum for the Category I nonprecision approach established for that runway or one statue mile (RVR 5000), whichever is higher.
(3) The flight is operating clear of clouds and can remain clear of clouds throughout the contact approach. The flight visibility must be sufficient for the pilot to see and avoid all obstacles and safely maneuver the aircraft to the landing runway using external visual references.
(4) The flight does not descend below the MEA/MSA, MVA, or the FAF altitude, as appropriate, until:

(a) The flight is established on the instrument approach procedure, operating below the reported ceiling, and the pilot has identified sufficient prominent landmarks to safely navigate the aircraft to the airport, or
(b) The flight is operating below any cloud base which constitutes a ceiling, the airport is in sight, and the pilot can maintain visual contact with the airport throughout the maneuver.

(5) The flight does not descend below the highest circling MDA prescribed for the runway of intended landing until the aircraft is in a position from which a descent to touch down, within the touchdown zone, can be made at a normal rate of descent using normal maneuvers.

b. If Applicable, Special Limitations and Provisions for Instrument Approach Procedures at Foreign Airports.

(1) Foreign approach lighting systems equivalent to U.S. standards are authorized for precision and nonprecision instrument approaches. Sequenced flashing lights are not required when determining the equivalence of a foreign approach lighting system to U.S. standards.
(2) For straight-in landing minimums at foreign airports where an MDA(H) or DA(H) is not specified, the lowest authorized MDA(H) or DA(H) shall be obtained as follows:

(a) When an obstruction clearance limit (OCL) is specified, the authorized MDA(H) or DA(H) is the sum of the OCL and the touchdown zone elevation (TDZE). If the TDZE for a particular runway is not available, threshold elevation shall be used. If threshold elevation is not available, airport elevation shall be used. For approaches other than ILS, MLS, or GLS, the MDA(H) may be rounded to the next higher 10-foot increment.
(b) When an obstacle clearance altitude (OCA)/obstacle clearance height (OCH) is specified, the authorized MDA(H) or DA(H) is equal to the OCA/OCH. For approaches other than ILS, MLS, or GLS, the authorized MDA(H) may be expressed in intervals of 10 feet.
(c) The HAT or HAA used for precision approaches shall not be below those specified in subparagraph a of this operations specification.

(3) When only an OCL or an OCA/OCH is specified, visibility and/or RVR minimums appropriate to the authorized HAA/HAT values determined in accordance with subparagraph b(2) above will be established in accordance with criteria prescribed by U.S. TERPS or Joint Aviation Authorities, Joint Aviation Requirements, operational agreements, Part 1 (JAR-OPS-1).

(4) When conducting an instrument approach procedure outside the United States, the certificate holder shall not operate an aircraft below the prescribed MDA(H) or continue an approach below the DA(H), unless the aircraft is in a position from which a normal approach to the runway of intended landing can be made and at least one of the following visual references is clearly visible to the pilot:

(a) Runway, runway markings, or runway lights.
(b) Approach light system (in accordance with 14 CFR Section 91.175(c)(3)(i)).
(c) Threshold, threshold markings, or threshold lights.
(d) Touchdown zone, touchdown zone markings, or touchdown zone lights.
(e) Visual glidepath indicator (such as, VASI, PAPI).
(f) Runway end identifier lights.

C078, IFR Lower Than Standard Takeoff Minimums, 14 CFR Part 121 Airplane Operations - All Airports.

Standard takeoff minimums are authorized in operations specification paragraph C056. The certificate holder is authorized to use lower than standard takeoff minimums in accordance with the limitations and provisions of this operations specification as follows.

a. Runway visual range (RVR) reports, when available for a particular runway, shall be used for all takeoff operations on that runway. All takeoff operations, based on RVR, must use RVR reports from the locations along the runway specified in this paragraph.

b. When takeoff minimums are equal to or less than the applicable standard takeoff minimum, the certificate holder is authorized to use the lower than standard takeoff minimums described below:

(1) Visibility or runway visual value (RVV) ¼ statute mile or touchdown zone RVR 1600, provided at least one of the following visual aids is available. The touchdown zone RVR report, if available, is controlling. The mid RVR report may be substituted for the touchdown zone RVR report if the touchdown zone RVR report is not available.

(a) Operative high intensity runway lights (HIRL).
(b) Operative runway centerline lights (CL).
(c) Serviceable runway centerline marking (RCLM).
(d) In circumstances when none of the above visual aids are available, visibility or RVV ¼ statute mile may still be used, provided other runway markings or runway lighting provide pilots with adequate visual reference to continuously identify the takeoff surface and maintain directional control throughout the takeoff run.

[NOTE: If an operator is not authorized RVR 1000 the POI will not select RVR 1000 in the OPSS. If the OPSS is not available the POI should delete subparagraph b(2), b(3), & b(4) from the word boilerplate.]

(2) Touchdown zone RVR 1000 (beginning of takeoff run) and rollout RVR 1000, provided all of the following visual aids and RVR equipment are available.

(a) Operative runway centerline lights (CL).
(b) Two operative RVR reporting systems serving the runway to be used, both of which are required and controlling. A mid-RVR report may be substituted for either a touchdown zone RVR report if a touchdown zone report is not available or a rollout RVR report if a rollout RVR report is not available.

[NOTE: If an operator is not authorized RVR 500 the POI will not select RVR 500 in the OPSS. If the OPSS is not available the POI should delete subparagraph b(3), & b(4) from the word boilerplate.]

(3) Touchdown zone RVR 500 (beginning of takeoff run), mid RVR 500, and rollout RVR 500, provided all of the following visual aids and RVR equipment are available.

(a) Operative runway centerline lights (CL).
(b) Runway centerline markings (RCLM).
(c) Operative touchdown zone and rollout RVR reporting systems serving the runway to be used, both of which are controlling, or three RVR reporting systems serving the runway to be used, all of which are controlling. However, if one of the three RVR reporting systems has failed, a takeoff is authorized, provided the remaining two RVR values are at or above the appropriate takeoff minimum as listed in this subparagraph.

(4) At foreign airports which have runway lighting systems equivalent to U.S. standards, takeoff is authorized with a reported touchdown zone RVR of 150 meters, mid RVR of 150 meters, and rollout RVR of 150

meters. At those airports where it has been determined that the runway lighting system is not equivalent to U.S. standards, the minimums in subparagraphs a(1) or (2), as appropriate, apply.

c. Takeoff Guidance System, If Applicable. If the certificate holder is authorized to use takeoff minimums based upon the use of takeoff guidance systems, the minimums will be specified for the aircraft listed in the Table 1 below. The certificate holder shall conduct no other takeoffs using these takeoff minimums. If subparagraph c is not authorized, N/A will be annotated in each of the columns in the table.

(1) Special provisions and limitations.
(a) Operative high intensity runway lights (HIRL).
(b) Operative runway centerline lights (CL).
(c) Serviceable runway centerline markings (RCLM).
(d) Front course guidance from the localizer must be available and used (if applicable to guidance systems used).
(e) The reported crosswind component shall not exceed 10 knots.
(f) Operative touchdown zone, and rollout RVR reporting systems serving the runway to be used, both of which are controlling, or three RVR reporting systems serving the runway to be used, all of which are controlling. However, if one of the three RVR reporting systems has failed, a takeoff is authorized, provided the remaining two RVR values are at or above the appropriate takeoff minimum as listed in this subparagraph.
(g) The pilot-in-command and the second-in-command have completed the certificate holders approved training program for these operations.
(h) All operations using these minimums shall be conducted to runways which provide direct access to taxi routings which are equipped with operative taxiway centerline lighting which meets U.S. or ICAO criteria for CAT III operations; or other taxiway guidance systems approved for these operations.

(2) The certificate holder is authorized to use the following takeoff minimums for the airplanes listed below.

Table 1 (N/A = Not Authorized)

Airplane M/M/S	Lowest Authorized RVR	Required Takeoff Guidance System

[NOTE: If an operator is not authorized pilot assessment the POI will not select this statement in the OPSS. If the OPSS is not available the POI should delete subparagraph d in its entirety from the word boilerplate.]

d. Pilot Assessment of RVR for Takeoff (if applicable). In circumstances when the touchdown zone RVR reporting system has failed, is inaccurate, or is not available, the certificate holder is authorized to substitute pilot assessment of equivalent RVR for any touchdown zone RVR report required by this operations specification paragraph provided that:

(1) The pilot has completed the FAA-approved training program for visibility assessment in lieu of RVR, and
(2) Runway markings or runway lighting is available to provide adequate visual reference for the assessment.

Sample operations specifications, C081, Special Non CFR Part 97 Instrument Approach or Departure Procedures.

The certificate holder is authorized to conduct operations using the Special Terminal Instrument Procedures provided the operation is conducted in accordance with the limitations and provisions in the Special Terminal Instrument Procedures described in this operations specification.

a. Authorized Aircraft and Equipment. The certificate holder is authorized to conduct special non CFR Part 97 instrument approach or departure operations specified for the following airports, provided the operation is conducted in accordance with the limitations and provisions listed below:

Airport IDENT	Special Terminal Instrument Procedures

(this subparagraph should be deleted for the Part 125 operators)

b. Special Limitations or Provisions.

(1) The certificate holder shall not conduct any operation authorized by this operations specification, unless the certificate holder's approved training program provides training in the equipment and special procedures to be used.

[ED NOTE: JE's Review needed, regarding inclusion of provisions for Para C081 and C0xx below]

C081, Special Non CFR Part 97 Instrument Approach or Departure Procedures.

C0xx, Required Navigation Performance (RNP).
The certificate holder is authorized to conduct terminal area RNAV operations using area navigation systems approved for RNP operations and shall conduct all such operations in accordance with the provisions of these operations specifications.

a. Standard Terminal Area RNP Levels. The certificate holder shall not conduct any operation authorized by this paragraph, unless the required navigation performance (RNP level) for the specified procedure or operation has been specified to the aircraft navigation system and the actual navigation performance (ANP) or estimated position error (EPE) is less than the specified RNP.

STANDARD TERMINAL AREA RNP Levels

RNP Levels	Applicability/Operation (Approach segment)
RNP 1	Initial/Intermediate approach
RNP 0.5	Initial/Intermediate/Final approach
RNP 0.3	Initial/Intermediate/Final approach

b. Aircraft and Equipment with Airplane Flight Manual Authorization for RNP . The certificate holder is authorized to conduct terminal area instrument operations using the following aircraft and area navigation systems to comply with RNP requirements when operated in accordance with the approved airplane flight manual.

Airplane Type M/M/S	Area Navigation Systems M/M	Lowest Authorized RNP
B737-400	Smiths/U-10.2	RNP 0.15 (see note 3)
A319-112	Honeywell/Sextant FMGC B546 CAM 0102 Software SWPS406625-931	RNP 0.15 See Notes 3 and 7

c. Other Aircraft and Equipment Authorization for RNP . The certificate holder is authorized to conduct terminal area instrument operations using the following aircraft and area navigation systems to comply with RNP requirements when operated in accordance with the approved airplane flight manual.

Airplane Type M/M/S	Area Navigation Systems M/M	Lowest Authorized RNP
B737-400	Smiths/U7.4	RNP 1.0 (See Notes 1 and 5)

d. Special Limitations.

(1)

(2)

NOTES:
1. Departure Only
2. Approach Only
3. Autopilot required for approach operations at RNP levels of 0.3 or less.
4. When the automatic runway position update is utilized by line selecting the departure runway on the CDU.
5. When the automatic runway position update is utilized by selecting the TO/GA switch during takeoff.
6. When a quick alignment of the inertial reference units to the departure runway coordinates contained in the airborne navigation database is conducted within 1,000 feet of the departure runway threshold and within 15-minutes of departure.
7. When the required navigation performance (RNP level) for the specified procedure or operation has been specified to the aircraft navigation system and the actual navigation performance (ANP) or estimated position error (EPE) is less than the specified RNP. The RNP level may be specified to the navigation system either manually, through the data base, or use the navigation system default value.
8. Unless otherwise specified on the instrument procedure, approaches other than ILS, MLS or GLS require use of RNP of 0.3 or less.
9. Other RNP Levels, not otherwise specified in an approved terminal area or instrument approach procedure, are as specified below:

Other RNP Levels Approved(Example only)

RNP Type	Applicability/Operation (Approach segment)
RNP 0.3/125	Initial/Intermediate/Final approach with specified barometric vertical guidance (VNAV)
RNP 0.03/45	Final approach with specified vertical guidance
RNP 0.01/15	Final approach with specified vertical guidance
RNP .003/15	Final approach with specified vertical guidance

APPENDIX 8

Use Of Alternative Operating Minima

1. General.

This appendix provides a basis for determining optional operating minima which an operator may use if authorized by operations specifications, in lieu of otherwise published minima. Use of these minima are limited to use within the U.S., within any JAA (European) State that authorizes use of these minima or equivalent, or in other States which accept or apply FAA or JAA criteria.

Alternate minima may be based on the tables and conversions agreed by FAA and JAA as reflected in the harmonized values of this appendix. Minima based on these tables and conversions which have been determined to be acceptable to FAA may be approved for use by U.S. operators, or for international operators flying to U.S. airports when those operators have implemented applicable provisions and criteria of the main body of this Advisory Circular, or for international operators, equivalent provisions to FAA or JAA criteria.

These minima provide a basis for determination of a single table for Aerodrome Operating Minima regardless of approach type, and are intended for use by aircraft flying a stabilized descent path and instrument procedures and flight crew procedures which are based on use of a stabilised descent path to the runway (e.g., using an xLS glide slope, VNAV, or other specifically approved method for maintaining a constant vertical descent path or rate during final approach). Use of minima in this table for other procedures not using a glide slope or constant VNAV descent path to minima is considered only on a case by case basis, by FAA.

This table is intended to cover all categories of straight-in approach procedures including xLS (e.g., ILS GLS, MLS) and approaches other than xLS (e.g., RNAV, LOC, BCRS, VOR, NDB). Any procedure based on U.S. TERPS or ICAO PANS-OPS, or special procedures otherwise approved by FAA are eligible to use minima of this appendix.
Approaches with glide slope angles or VNAV descent paths in excess of 3.77 degrees, or special procedures at certain airports which require specific knowledge or training, are not typically eligible for use of the approach minima listed in this Appendix.

2. Terminology

A Stabilised approach is considered to mean an approach where:

- A constant, predetermined descent path (usually 3 degrees) is flown from the final approach fix or point to the runway using:
    - xLS Glide path, or
    - RNAV(VNAV), or
    - Height cross check as a function of distance (e.g., DME), or
    - Height cross check as a function of time (e.g., timing from an approach fix), and

- A missed approach is executed upon reaching Decision Altitude/height (DA(H) or Minimum Descent Altitude/height (MDA(H)) as applicable to the approach, if the pilot has not established the necessary visual reference.

3. "Go-Around" Transition To A Missed Approach When Using a DA(H) or MDA(H)

When using minima based on this appendix in conjunction with a DA(H), flight crew procedures for timely initiation of a go-around and anticipated altitude loss below the DA(H) during the momentary transition to a go-around are assumed to be the same as those specified for ILS, MLS or GLS. The procedures used may be as specified by the operator or by the aircraft manufacturer, as applicable.

When using minima based on this appendix in conjunction with an MDA(H), it is recognised that the missed approach path following a stabilised approach may momentarily descend below MDA(H) while initiating the missed approach. This momentary and slight descent below MDA(H) during the transition to a missed approach is considered acceptable and is assumed to typically result in a displacement below MDA(H) of 50 feet or less.

4. Alternative RVR/Visibility Value Table.

The following minimum RVR/Visibility values are specified in relation to various HAT values for DA(H) or MDA(H). These values, or equivalent values in terms of RVR or miles of visibility, may be used as the basis to specify various landing minima. These tables apply to formulation of minima for instrument procedures other than those for Category II or III, except as specified in the Notes associated with the table(s) below. The values in these tables may be used as a basis for determination of minima in lieu of values specified by U.S. TERPS or ICAO PANS-OPS. These values are considered applicable to any Category of aircraft (e.g., Instrument approach Category A, B, C, or D), and are applicable up to a 3.77 degree final approach segment descent gradient.

Alternative RVR/Visibility Values
for Various Heights Above Touchdown (HAT)

(RVR/Visibility when based on units related to *Feet*)

Table A8-1

HAT Band (ft)	RVR/Visibility (feet)			
	FF	IF	BF	NF
200 - 209	1800	2000	2700	3000
210 - 219	1800	2000	2850	3250
220 - 229	1800	2000	3000	3400
230 - 239	1800	2000	3150	3550
240 - 249	1800	2350	3300	3700
250 - 259	1800	2500	3450	3850
260 - 279	1800	2700	3700	4100
280 - 299	2050	3000	4000	4400
300 - 319	2350	3300	4300	4700
320 - 339	2650	3600	4600	5000
340 - 359	2950	3950	4900	5300
360 - 379	3250	4250	5200	5600
380 - 399	3550	4550	5500	5900
400 - 419	3850	4850	5800	6200
420 - 439	4150	5150	6100	6500
440 - 459	4450	5450	6450	6800
460 - 479	4750	5750	6750	7150
480 - 499	5050	6050	7050	7450

HAT Band (ft)	RVR/Visibility (feet)			
	FF	IF	BF	NF
500 - 519	5350	6350	7350	7750
520 - 539	5650	6650	7650	8050
540 - 559	6000	6950	7950	8350
560 - 579	6300	7250	8250	8650
580 - 599	6600	7550	8550	8950
600 - 619	6900	7850	8850	9250
620 - 639	7200	8200	9150	9550
640 - 659	7500	8500	9450	9850
660 - 679	7800	8800	9750	10150
680 - 699	8100	9100	10050	10450
700 - 719	8400	9400	10350	10750
720 - 739	8700	9700	10700	11050
740 - 759	9000	10000	11000	11350
760 - 799	9450	10450	11450	11850
800 - 849	10150	11150	12100	12500
850 - 899	10900	11900	12900	13250
900 - 949	11650	12650	13650	14050
950 - 1000	12450	13400	14400	14800

Table A8-1 Note 1- An RVR/Visibility less than 1800 ft may be authorized for certain runways with full facilities (FF - e.g., ALSF I or ALSF II) and TDZ/CL lights; An RVR/Visibility less than 1800 ft may be authorized for certain runways with MALSR or equivalent (with or without TDZ/CL lights), if automatic landing or flight guidance HUD based approaches are conducted. (See section 5.3.2. Special Category II Authorizations).

Alternative RVR/Visibility Values
for Various Heights Above Touchdown (HAT)

(RVR/Visibility when based on units related to *Meters*)

Table A8-2

HAT BAND (ft)	RVR/Visibility (meters)			
	FF	IF	BF	NF
200 - 209	550	700	850	1000
210 - 219	550	700	850	1000
220 - 229	550	700	900	1050
230 - 239	550	700	950	1100
240 - 249	550	700	1000	1150
250 - 259	600	750	1050	1200
260 - 279	600	850	1150	1250
280 - 299	600	900	1200	1350
300 - 319	700	1000	1300	1450
320 - 339	800	1100	1400	1500
340 - 359	900	1200	1500	1600
360 - 379	1000	1300	1600	1700
380 - 399	1100	1400	1700	1800
400 - 419	1150	1450	1750	1900
420 - 439	1250	1550	1850	2000
440 - 459	1350	1650	1950	2100
460 - 479	1450	1750	2050	2150
480 - 499	1550	1850	2150	2250

HAT BAND (ft)	RVR/Visibitlity (meters)			
	FF	IF	BF	NF
500 - 519	1650	1950	2250	2350
520 - 539	1750	2050	2350	2450
540 - 559	1800	2100	2400	2550
560 - 579	1900	2200	2500	2650
580 - 599	2000	2300	2600	2750
600 - 619	2100	2400	2700	2800
620 - 639	2200	2500	2800	2900
640 - 659	2300	2600	2900	3000
660 - 679	2400	2700	3000	3100
680 - 699	2450	2750	3050	3200
700 - 719	2550	2850	3150	3300
720 - 739	2650	2950	3250	3350
740 - 759	2750	3050	3350	3450
760 - 799	2900	3200	3500	3600
800 - 849	3100	3400	3700	3800
850 - 899	3350	3650	3950	4050
900 - 949	3550	3850	4150	4300
950 - 1000	3800	4100	4400	4500

Table A8-2 Note 1- An RVR/Visibility less than 600m may be authorized for certain runways with full facilities (FF - e.g., ALSF I or ALSF II) and TDZ/CL lights; An RVR/Visibility less than 600m may be authorized for certain runways with MALSR or equivalent (with or without TDZ/CL lights), if automatic landing or flight guidance HUD based approaches are conducted. (See section 5.3.2. Special Category II Authorizations).

Table A8-1 and A8-2 Note 2 Minima values higher than the values shown in Table A8-3 below need not be applied to determination of minima when a higher value is otherwise shown in Table A8-1 or A8-2.

Table A8-1 and A8-2 Note 3 Unless otherwise specified by FAA, no resulting minima RVR/visibility value need necessarily result in a value greater than the applicable values shown in Table A8-4 below.

Table A8-1 and A8-2 Note 4 - Category A or B aircraft using an acceptable stabilised approach method may use the lower of the minima specified in either the table above, or minima as specified in accordance with U.S. TERPS.

Limitations on RVR/Visibility Minimum Values
for Approaches Other than xLS or 3-D RNAV RNP

Table A8-3

Aircraft category	**A**	**B**	**C**	**D**	**Facility Requirements**
Minimum RVR/visibility	750m (2400ft)	750m (2400ft)	750m (2400ft)	750m (2400ft)	NDB, VOR, VOR/DME, LOC, LOC/DME, VDF, LDA, SDF, SRE, 2D-RNAV with a procedure meeting at least the following criteria: - FAS offset from Rwy track ≤ 5 degrees, - A FAF is designated, - Distance to Rwy information is available (e.g., via DME or RNAV), and - Distance from NAVAID facility to Rwy Threshold ≤ 8 nm
Minimum RVR/visibility	1000 (3000ft)	1000 (3000ft)	1200 (4000ft)	1200 (4000ft)	Instrument approach types or cases where the above criteria are not met.

The above table is not applicable to xLS or 3-D RNAV RNP based Minima. Table A8-1 and A8-2 are used directly for determination of 3-D RNAV RNP based minima, without respect to use of the limiting values of Table A8-3.

Limitations on "Upper cut-off" Values for RVR/Visibility Minima

Table A8-4

Aircraft category	**A**	**B**	**C**	**D**
Maximum required RVR/Visibility	1500 m (5000 ft/)	1500 m (5000 ft)	2400 m (1 1/2 sm)	2400 m (1 1/2 sm)

Unless otherwise specified by FAA, values higher than the values shown in Table A8-4 above need not be applied when determining RVR/Visibility minima from tables A8-1 or A8-2.

5. Approach And Runway Lighting Systems Definition, Classification, And Equivalence

Visual Aid Classification for Determination of RVR/Visibility for Instrument Approaches

Table A8-5

European Lighting Systems (JAA)			U.S. Lighting Systems (FAA)		
Class of facility	**Length of approach lights**	**Components included**	**Class of facility**	**Length of approach lights**	**Components included**
Full (Calvert or Barette centerline configuration)	720m or more HI/MI	HI/MI approach lights;	ALSF1/ALSF2/ ALSR/SSALR MALSR	>720m	including sequence flashers
Intermediate (simplified approach light system)	420m - 719m HI/MI	HI runway edge lights, HI threshold lights,	MALSF, MALS SSALF, SALS	>420-719m	including sequence flashers
Basic (no ICAO standard exists)	210 - 419 m HI, MI or LI including one crossbar	HI runway end lights.	ODALS	<420m	including sequence flashers
Nil	No approach lights		No approach lights	No approach lights	No approach lights

6. Applicability to Various Classes Of Instrument Approach Procedures.

U.S. Instrument Approach procedures are classified as Category I, II, or III by U.S. Operation Specifications, to address any type of instrument approach. The terms Category II and Category III apply to xLS approach types (i.e., ILS, GLS or MLS). For U.S. operators, Category I applies to xLS approaches and also applies to approach types other than xLS (e.g., also applies to RNAV, LOC, VOR, or NDB). States other than the U.S. may or may not apply the term Category I in this manner, or may only apply the term Category I to xLS approaches (e.g., ILS, MLS or GLS).

Nonetheless, the above equivalent minima provisions based on FAA/JAA harmonized Tables A8-1 through A8-5 may be applied to determination of minima for any Category I or II approach type for a U.S. Operator regardless of classification (e.g., not withstanding former classifications such as precision or non-precision), unless the FAA or other State of an Aerodrome specifically preclude use of minima based on these tables.

7. Transition Provisions

Transitions provisions may be proposed by operators and may be approved by CHDOs to implement provisions of AC120-29A, as applicable to this Appendix. This is to facilitate timely transition to use of these alternate minima. Transition provisions may address such issues as the operator's use of interim charting provisions, interim flight procedures, the operators optional use of either traditional or alternative minima during the transition period, or other issues as determined appropriate by the operator or CHDO.

8. Authorized RVR Minima Conversions between "Feet and Meters"

The RVR equivalent visibility values shown in Table A8-6 expressed in feet or meters may be used where necessary. When appropriate, the operator may propose and the CHDO may approve use of the necessary equivalent RVR visibility determinations for meters or feet conversion operationally, or for instrument procedure minima development.

Acceptable "Meters to Feet" or "Feet to Meters" Conversions for RVR

Table A8 - 6

RVR	
Feet	**Meters**
100ft	25 m
150 ft	50 m
300 ft	75 m
400 ft	125 m
500 ft	150 m
600 ft	175 m
700 ft	200 m
800 ft	250 m
900 ft	275 m
1000 ft	300 m
1200 ft	350 m
1300 ft	400 m
1500 ft	450 m *
1600 ft	500 m
1800 ft	550 m
2000 ft	600 m
2100 ft	650 m *
2300 ft	700 m
2400 ft	750 m
2600 ft	800 m
2800 ft	900 m *
3000 ft	1000 m
4000 ft	1200 m
4600 ft	1400 m
5000 ft	1500 m
6000 ft	1800 m

* = Denotes a value not operationally used at present

9. Acceptable Meteorological Visibility or RVR Equivalence or Conversions

The following conversion tables may be used in conjunction with the minima tables above to specify RVR/Visibility minima in terms of feet, meters, or meteorological visibility when appropriate. Interpolations are permitted where necessary. The operator may propose and the CHDO may approve use of the necessary equivalent RVR/visibility values for use operationally, or for instrument procedure minima development.

Acceptable Statute Mile/Meter/Nautical Mile Conversions

Table A8 - 7

RVR/Visibility		
Statute Miles	**Meters**	**Nautical Miles**
1/8 sm	200 m	1/9 nm
1/4 sm	400 m	1/4 nm
3/8 sm	600 m	3/8 nm
1/2 sm	800 m	1/2 nm
5/8 sm	1000 m	5/8 nm
3/4 sm	1200 m	7/10 nm
7/8 sm	1400 m	7/8 nm
1 sm	1600 m	9/10 nm
1 1/8 sm	1800 m	1 1/8 nm
1 1/4 sm	2000 m	1 1/10 nm
1 1/2 sm	2400 m	1 3/10 nm
1 3/4 sm	2800 m	1 1/2 nm
2 sm	3200 m	1 3/4 nm
2 1/4 sm	3600 m	2 nm
2 1/2 sm	4000 m	2 1/2 nm
2 3/4 sm	4400 m	2 4/10 nm
3 sm	4800 m	2 6/10 nm

Interpolation for above RVR/visibility values is permitted